RED FLAG WARNING STATISTICS FOR 2004

Table Three shows the Red Flag verification statistics for the 2004 fire season.

TABLE THREE (ALL WARNINGS)

ZONE	# RFW	CORRECT RFW (A)	INCORRECT RFW (B)	MISSED EVENTS (C)	POD A/(A+C)	CSI A/(A+B+C)	FAR (1-[A/(A+B)])
601	0	0	0	0	0	0	0
612	0	0	0	0	0	0	0
602	0	0	0	0	0	0	0
603	0	0	0	0	0	0	0
604	0	0	0	0	0	0	0
605	1	1	0	0	1.00	1.00	0
606	1	1	0	0	1.00	1.00	0
607	2	0	2	0	0	0	1.00
608	4	4	0	0	1.00	1.00	0.00
660	1	0	1	0	0	0	1.00
TOTALS (ALL)	9	6	3	0	1.00	0.67	0.33
LIGHTNING	9	6	3	0	1.00	0.67	0.33
WIND/RH	0	0	0	0	0	0	0

NUMBER OF WARNED EVENTS: 4
EVENTS PRECEDED BY A WATCH: 3 OR 75%
MISSED EVENTS: 0

NOTE: The Red Flag criteria for 2004 were modified from 2003. Refer to the Annual Operating Plan for complete Red Flag criteria.

EVENT LEAD TIMES

Tables Four and Five show the respective warning and watch lead times for all events in 2004.

TABLE FOUR – WARNING LEAD TIMES

EVENT	RANGE OF LEAD TIMES	AVE. ZONE LEAD TIME
August 1 (Episode Lightning)	1 hr 17 min ZONE 608	1 HR 17 MINS
August 2 (Episode Lightning)	1 hr 43 min ZONE 608	1 HR 43 MINS
August 13 (Episode Lightning)	10 hrs 4 min ZONE 608	10 HRS 4 MINS
August 14 (Episode Lightning)	0 hrs ZONES 605 and 606 to 7 hrs 25 min ZONE 608	2 HRS 28 MINS

TABLE FIVE – WATCH LEAD TIMES

EVENT	RANGE OF LEAD TIMES	AVE. ZONE LEAD TIME
August 1 (Episode Lightning)	53 hrs 13 min ZONE 608	53 HRS 13 MINS
August 12 (Episode Lightning)	47 hrs 00 min ZONE 608**	47 HRS 0 MINS
August 13 (Episode Lightning)	19 hrs 52 min ZONES 605 AND 606 to 28 hrs 52 min ZONE 608	22 HRS 54 MINS

** = Lightning actually occurred 1400 on August 14 in zone 608. The original watch (1500 on August 12) was valid. Technically, a watch did not precede the warning issued at 856 on August 13 for zone 608. The original watch was valid for the 14th.

A few notes on verification and the 2004 events: The overall severity of any fire season is highly correlated with the extent and frequency of critical fire weather patterns during the season. It is not unusual to have an extended "dry period" during any given fire season. This, in itself, could result in an elevated degree of fire activity, provided the fuel conditions are right. However, to elevate a "high" fire danger situation to a "critical" level normally requires an additional weather element (or trigger) to be superimposed on the dryness factor. This additional trigger could be "episode" or "dry" lightning, an extremely unstable air mass (Haines 6), or a combination of strong wind and low humidity. Red Flag warnings are issued when a combination of critical weather elements exist **WITH** sufficiently dry fuels and severe burning conditions.

Determining lead-time for "episode" or "dry" lightning is highly subjective. In fact, the term "dry lightning" is rudimentary and subject to debate. This is the primary reason the Portland office changed lightning criteria for 2004. The general premise was to avoid the subjectivity of determining whether lightning was wet or dry. If the fuel conditions were expected to remain "high" or "critical" during and after the lightning event, then a Fire Weather Watch or Red Flag warning was warranted. The Northwest Coordination Center developed a scheme to monitor fuel conditions. The two correlating factors were determined to be Energy Release Component (ERC) and 100-hour fuel moistures. It was found that there were distinct breakpoints of ERC and 100-hour fuel moistures that corresponded to minimal or no large fire potential, an "average" risk of large fire potential, and a "higher than average" risk of large fire potential.

It is a given that fires **WILL** occur during or after a lightning episode following an extended dry spell. However, does that fact alone warrant a Red Flag warning? If all the resultant fires remain "small" and/or initial attack can handle them, was the event "critical"? Should one or more fires get "big", then it is reasonable to assume the event was "critical" and a warning justified.

The 2004 Red Flag criteria were modified from 2003. It was determined that the 2003 criteria were confusing, especially wind/low RH parameters. Nearly every zone had its own wind/humidity criteria. It was decided to simplify these criteria by creating distinct areas. The Portland fire weather region was divided into five regions, and Red Flag wind/humidity values assigned to each region. It was also assumed that if one zone within a region hit criteria, then by default, the remaining zones within the region achieved criteria. There were a couple of "classic" east wind events last year that did not verify simply because of problems with some RAWS stations. It was not because the RAWS stations were out of service. Environmental changes at some locations resulted in poor wind measurements. A good wind site in the past may have become a poor wind site due to the growth of trees or brush.

Another problem arises when verifying warnings by zone. Multiple zones may be included in a warning, but some areas may not have "good" verifying observing stations. Some zones may end up not meeting warning criteria simply because there are no "good" verification stations. This, in turn, will result in lower Probability of Detection (POD) scores, and higher False Alarm Rates (FAR). Moving RAWS stations may actually hinder verification. There has been a push in the past couple of years for units or districts to conduct seasonal surveys on their RAWS stations and take appropriate action to clear brush, remove trees, etc in order to conform to RAWS site standards.

- ***The coastal zones (601 and 612) recorded high temperatures of 90 degrees or higher on three days: June 17th, July 23rd, and August 8th. The highest temperature was 96 degrees at Cannibal Mountain on July 23rd and August 8th.***
- ***The highest low temperature in zones 605, 607, and 660 was 75 degrees at Canyon Creek on July 23rd and 24th and Horse Creek on July 24th.***
- ***The highest low temperature in zones 606 and 608 was 75 degrees at Brush Creek on July 23rd. Yellowstone and Brush Creek registered lows of 73 degrees on July 24th.***